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(9 AND (SUBJECT ADJ COMPUTED)).USPT,PGPB,JPAB,EPAB,DWPI,TDBD.	0
(L9 AND (SUBJECT ADJ COMPUTED)).USPT,PGPB,JPAB,EPAB,DWPI,TDBD.	0

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Term	Documents
SUBJECT	896341
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COMPUTED	171517
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(L9 AND (SUBJECT ADJ COMPUTED)).USPT,PGPB,JPAB,EPAB,DWPI,TDBD.	0

Database:

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<u>L10</u>	L9 and (subject adj computed)	0	<u>L10</u>
<u>L9</u>	L5 and (human adj subject)	174	<u>L9</u>
<u>L8</u>	L4 and (human asj subject)	0	<u>L8</u>
<u>L7</u>	L5 and subject	275	<u>L7</u>
<u>L6</u>	L5 and (human asj subject)	0	<u>L6</u>
<u>L5</u>	L4 and imag\$4	336	<u>L5</u>
<u>L4</u>	L3 and (computer adj program\$4)	336	<u>L4</u>
<u>L3</u>	L2 and computer	970	<u>L3</u>
<u>L2</u>	L1 and Phantom	1576	<u>L2</u>
<u>L1</u>	(magnetic adj resonance)	59888	<u>L1</u>

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<u>Set Name</u> side by side	<u>Query</u>	<u>Hit Count</u>	<u>Set Name</u> result set
<i>DB=USPT,PGPB,JPAB,EPAB,DWPI,TDBD; PLUR=YES; OP=ADJ</i>			
<u>L10</u>	L9 and (subject adj computed)	0	<u>L10</u>
<u>L9</u>	L5 and (human adj subject)	174	<u>L9</u>
<u>L8</u>	L4 and (human asj subject)	0	<u>L8</u>
<u>L7</u>	L5 and subject	275	<u>L7</u>
<u>L6</u>	L5 and (human asj subject)	0	<u>L6</u>
<u>L5</u>	L4 and imag\$4	336	<u>L5</u>
<u>L4</u>	L3 and (computer adj program\$4)	336	<u>L4</u>
<u>L3</u>	L2 and computer	970	<u>L3</u>
<u>L2</u>	L1 and Phantom	1576	<u>L2</u>
<u>L1</u>	(magnetic adj resonance)	59888	<u>L1</u>

END OF SEARCH HISTORY

WEST[Generate Collection](#)[Print](#)**Search Results - Record(s) 1 through 15 of 15 returned.**☐ 1. Document ID: US 6334846 B1 Relevance Rank: 54

L2: Entry 2 of 15

File: USPT

Jan 1, 2002

US-PAT-NO: 6334846

DOCUMENT-IDENTIFIER: US 6334846 B1

TITLE: Ultrasound therapeutic apparatus

DATE-ISSUED: January 1, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Ishibashi; Yoshiharu	Tokyo			JP
Fujimoto; Katsuhiko	Urawa			JP
Shibata; Mariko	Yokohama			JP
Suzuki; Takuji	Kawasaki			JP
Aida; Satoshi	Tokyo			JP

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Kabushiki Kaisha Toshiba	Kawasaki			JP	03

APPL-NO: 09/ 335916

DATE FILED: June 18, 1999

PARENT-CASE:

This application is a Continuation-in-part of application Ser. No. 08/624,104 filed Mar. 29, 1996, now U.S. Pat. No. 5,984,881, issued Nov. 16, 1990.

FOREIGN-APPL-PRIORITY-DATA:

COUNTRY	APPL-NO	APPL-DATE
JP	7-097474	March 31, 1995
JP	7-203576	August 9, 1995
JP	8-070206	March 26, 1996

INT-CL: [07] A61 B 5/055, A61 B 8/00

US-CL-ISSUED: 600/439; 600/412

US-CL-CURRENT: 600/439; 600/412

FIELD-OF-SEARCH: 601/2, 601/3, 600/411, 600/439, 600/412

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<u>4617931</u>	October 1986	Dory	
<u>4620546</u>	November 1986	Aida et al.	
<u>4658828</u>	April 1987	Dory	
<u>4942878</u>	July 1990	Dory	
<u>4986275</u>	January 1991	Ishida et al.	
<u>RE33590</u>	May 1991	Dory	
<u>5076277</u>	December 1991	Iwama et al.	128/660.03
<u>5080101</u>	January 1992	Dory	
<u>5080102</u>	January 1992	Dory	
<u>5111822</u>	May 1992	Dory	
<u>5143073</u>	September 1992	Dory	
<u>5150712</u>	September 1992	Dory	
<u>5247935</u>	September 1993	Cline et al.	
<u>5291890</u>	March 1994	Cline et al.	
<u>5391140</u>	February 1995	Shaetzke et al.	601/4
<u>5431621</u>	July 1995	Dory	601/2
<u>5435311</u>	July 1995	Umemura et al.	128/660.03
<u>5558092</u>	September 1996	Unger et al.	128/660.03
<u>5722411</u>	March 1998	Suzuki et al.	
<u>5984881</u>	November 1999	Ishibashi et al.	
<u>6083166</u>	July 2000	Holdaway et al.	
<u>6086535</u>	July 2000	Ishibashi et al.	
<u>6093148</u>	July 2000	Fujimoto	
<u>6188923</u>	February 2001	Bechtold	600/427
<u>6194899</u>	February 2001	Ishihara et al.	324/315

FOREIGN PATENT DOCUMENTS

FOREIGN-PAT-NO	PUBN-DATE	COUNTRY	US-CL
42 27 800	March 1993	DE	
42 29 817	March 1994	DE	
43 02 538	April 1994	DE	
0 162 735	November 1985	EP	
0 170 416	February 1986	EP	
0 370841	March 1990	EP	
0 370 841	May 1990	EP	
0 627 206	December 1994	EP	
6 59289	August 1994	JP	

ART-UNIT: 3737

PRIMARY-EXAMINER: Lateef; Marvin M.

ASSISTANT-EXAMINER: Shaw; Shawna J

ABSTRACT:

An ultrasonic therapeutic apparatus consisting of a therapeutic ultrasonic wave generating source driven by a driver circuit to generate therapeutic ultrasonic waves, an in vivo imaging probe so as to obtain a tissue tomographic image in the vicinity of the focus of the therapeutic ultrasonic waves. The imaging probe is used to receive echoes of the ultrasonic pulses emitted from therapeutic ultrasonic wave generating source. The driving conditions for the therapeutic ultrasonic wave generating source is

adjusted on the basis of a received echo signal. The received echo signal contains information about actual intensity of the therapeutic ultrasonic waves within a living body, thus improving the safety and reliability of therapy.

3 Claims, 67 Drawing figures

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC
Draw Desc	Image										

☐ 2. Document ID: US 5984881 A Relevance Rank: 53

L2: Entry 8 of 15

File: USPT

Nov 16, 1999

US-PAT-NO: 5984881

DOCUMENT-IDENTIFIER: US 5984881 A

TITLE: Ultrasound therapeutic apparatus using a therapeutic ultrasonic wave source and an ultrasonic probe

DATE-ISSUED: November 16, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Ishibashi; Yoshiharu	Tokyo			JP
Fujimoto; Katsuhiko	Urawa			JP
Shibata; Mariko	Yokohama			JP
Suzuki; Takuji	Kawasaki			JP
Aida; Satoshi	Tokyo			JP

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Kabushiki Kaisha Toshiba	Kawasaki			JP	03

APPL-NO: 08/ 624104

DATE FILED: March 29, 1996

FOREIGN-APPL-PRIORITY-DATA:

COUNTRY	APPL-NO	APPL-DATE
JP	7-097474	March 31, 1995
JP	7-203576	August 9, 1995

INT-CL: [06] A61 H 1/00

US-CL-ISSUED: 601/2

US-CL-CURRENT: 601/2

FIELD-OF-SEARCH: 601/2, 601/3, 601/4, 600/449, 600/459

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
Re33590	May 1991	Dory	
4617931	October 1986	Dory	
4620546	November 1986	Aida et al.	
4658828	April 1987	Dory	
4942878	July 1990	Dory	
4986275	January 1991	Ishida et al.	
5076277	December 1991	Iwama et al.	128/660.03
5080101	January 1992	Dory	
5080102	January 1992	Dory	
5111822	May 1992	Dory	
5143073	September 1992	Dory	
5150712	September 1992	Dory	
5391140	February 1995	Shaetzke et al.	601/4
5431621	July 1995	Dory	601/2
5435311	July 1995	Umemura et al.	128/660.03
5558092	September 1996	Unger et al	128/660.03

FOREIGN PATENT DOCUMENTS

FOREIGN-PAT-NO	PUBN-DATE	COUNTRY	US-CL
0 162 735	November 1985	EP	
0 170 416	February 1986	EP	
0 370 841	March 1990	EP	
0 627 206	December 1994	EP	
42 27 800	March 1993	DE	
42 29 817	March 1994	DE	
43 02 538	April 1994	DE	
6-59289	August 1994	JP	

ART-UNIT: 377

PRIMARY-EXAMINER: Manuel; George

ABSTRACT:

An ultrasonic therapeutic apparatus consisting of a therapeutic ultrasonic wave generating source driven by a driver circuit to generate therapeutic ultrasonic waves, an in vivo imaging probe so as to obtain a tissue tomographic image in the vicinity of the focus of the therapeutic ultrasonic waves. The imaging probe is used to receive echoes of the ultrasonic pulses emitted from therapeutic ultrasonic wave generating source. The driving conditions for the therapeutic ultrasonic wave generating source is adjusted on the basis of a received echo signal. The received echo signal contains information about actual intensity of the therapeutic ultrasonic waves within a living body, thus improving the safety and reliability of therapy.

6 Claims, 67 Drawing figures

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
Draw Desc	Image								

KWC

☐ 3. Document ID: US 6086535 A Relevance Rank: 53

L2: Entry 6 of 15

File: USPT

Jul 11, 2000

US-PAT-NO: 6086535

DOCUMENT-IDENTIFIER: US 6086535 A

TITLE: Ultrasound therapeutic apparataus

DATE-ISSUED: July 11, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Ishibashi; Yoshiharu	Tokyo			JP
Fujimoto; Katsuhiko	Urawa			JP
Shibata; Mariko	Yokohama			JP
Suzuki; Takuji	Kawasaki			JP
Aida; Satoshi	Tokyo			JP

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Kabushiki Kaisha Toshiba	Kawasaki			JP	03

APPL-NO: 09/ 335913

DATE FILED: June 18, 1999

PARENT-CASE:

This appln. is a DIV of Ser. No. 08/624,104 Mar. 29, 1996.

FOREIGN-APPL-PRIORITY-DATA:

COUNTRY	APPL-NO	APPL-DATE
JP	7-097474	March 31, 1995
JP	7-203576	August 9, 1995
JP	8-070206	March 26, 1996

INT-CL: [07] A61 B 8/00, A61 N 7/00

US-CL-ISSUED: 600/439; 601/2

US-CL-CURRENT: 600/439; 601/2

FIELD-OF-SEARCH: 601/2, 601/3, 600/447, 600/439, 600/437, 600/459, 310/316, 310/317, 310/320, 73/579

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<u>Re33590</u>	May 1991	Dory	
<u>3828769</u>	August 1974	Mettler	601/2
<u>4617931</u>	October 1986	Dory	
<u>4620546</u>	November 1986	Aida et al.	
<u>4658828</u>	April 1987	Dory	
<u>4942878</u>	July 1990	Dory	
<u>4986275</u>	January 1991	Ishida et al.	
<u>5076277</u>	December 1991	Iwama et al.	128/660.03
<u>5080101</u>	January 1992	Dory	
<u>5080102</u>	January 1992	Dory	
<u>5111822</u>	May 1992	Dory	
<u>5143073</u>	September 1992	Dory	
<u>5150712</u>	September 1992	Dory	
<u>5391140</u>	February 1995	Shaetzke et al.	601/4
<u>5431621</u>	July 1995	Dory	601/2
<u>5435311</u>	July 1995	Umemura et al.	128/660.03
<u>5460595</u>	October 1995	Hall et al.	601/2
<u>5526815</u>	June 1996	Granz et al.	600/439
<u>5558092</u>	September 1996	Unger et al.	128/660.03

FOREIGN PATENT DOCUMENTS

FOREIGN-PAT-NO	PUBN-DATE	COUNTRY	US-CL
0 162 735	November 1985	EP	
0 170 416	February 1986	EP	
0 370 841	March 1990	EP	
0 627 206	December 1994	EP	
42 27 800	March 1993	DE	
42 29 817	March 1994	DE	
43 02 538	April 1994	DE	
6-59289	August 1994	JP	

ART-UNIT: 377

PRIMARY-EXAMINER: Manuel; George

ABSTRACT:

An ultrasonic therapeutic apparatus consisting of a therapeutic ultrasonic wave generating source driven by a driver circuit to generate therapeutic ultrasonic waves, an in vivo imaging probe so as to obtain a tissue tomographic image in the vicinity of the focus of the therapeutic ultrasonic waves. The imaging probe is used to receive echoes of the ultrasonic pulses emitted from therapeutic ultrasonic wave generating source. The driving conditions for the therapeutic ultrasonic wave generating source is adjusted on the basis of a received echo signal. The received echo signal contains information about actual intensity of the therapeutic ultrasonic waves within a living body, thus improving the safety and reliability of therapy.

2 Claims, 67 Drawing figures

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
Draw Desc	Image								

KMIC

☐ 4. Document ID: US 6267734 B1 Relevance Rank: 53

L2: Entry 5 of 15

File: USPT

Jul 31, 2001

US-PAT-NO: 6267734

DOCUMENT-IDENTIFIER: US 6267734 B1

TITLE: Ultrasound therapeutic apparatus

DATE-ISSUED: July 31, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Ishibashi; Yoshiharu	Tokyo			JP
Fujimoto; Katsuhiko	Urawa			JP
Shibata; Mariko	Yokohama			JP
Suzuki; Takuji	Kawasaki			JP
Aida; Satoshi	Tokyo			JP

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Kabushiki Kaisha Toshiba	Kawasaki			JP	03

APPL-NO: 09/ 335915

DATE FILED: June 18, 1999

PARENT-CASE:

This application is a division of 08/624,104 filed Mar. 29, 1996.

FOREIGN-APPL-PRIORITY-DATA:

COUNTRY	APPL-NO	APPL-DATE
JP	7-097474	March 31, 1995
JP	7-203576	August 9, 1995

INT-CL: [07] A61 B 8/00

US-CL-ISSUED: 601/2; 600/439

US-CL-CURRENT: 601/2; 600/439

FIELD-OF-SEARCH: 601/2, 601/3, 600/439, 600/440, 600/441, 600/443

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<u>Re33590</u>	May 1991	Dory	
<u>4617931</u>	October 1986	Dory	
<u>4620546</u>	November 1986	Aida et al.	
<u>4658828</u>	April 1987	Dory	
<u>4942878</u>	July 1990	Dory	
<u>4986275</u>	January 1991	Ishida et al.	
<u>5076277</u>	December 1991	Iwama et al.	128/660.03
<u>5080101</u>	January 1992	Dory	
<u>5080102</u>	January 1992	Dory	
<u>5111822</u>	May 1992	Dory	
<u>5143073</u>	September 1992	Dory	
<u>5150712</u>	September 1992	Dory	
<u>5391140</u>	February 1995	Shaetzke et al.	601/4
<u>5431621</u>	July 1995	Dory	601/2
<u>5435311</u>	July 1995	Umemura et al.	128/660.03
<u>5553618</u>	September 1996	Suzuki et al.	
<u>5558092</u>	September 1996	Unger et al.	128/660.03
<u>5984881</u>	November 1999	Ishibashi et al.	
<u>6086535</u>	July 2000	Ishibashi et al.	

FOREIGN PATENT DOCUMENTS

FOREIGN-PAT-NO	PUBN-DATE	COUNTRY	US-CL
42 27 800	March 1993	DE	
42 29 817	March 1994	DE	
43 02 538	April 1994	DE	
0 162 735	November 1985	EP	
0 170 416	February 1986	EP	
0 370 841	March 1990	EP	
0 627 206	December 1994	EP	
6-59289	August 1994	JP	

ART-UNIT: 377

PRIMARY-EXAMINER: Lateef; Marvin M.

ASSISTANT-EXAMINER: Shaw; Shawna J.

ABSTRACT:

An ultrasonic therapeutic apparatus consisting of a therapeutic ultrasonic wave generating source driven by a driver circuit to generate therapeutic ultrasonic waves, an in vivo imaging probe so as to obtain a tissue tomographic image in the vicinity of the focus of the therapeutic ultrasonic waves. The imaging probe is used to receive echoes of the ultrasonic pulses emitted from therapeutic ultrasonic wave generating source. The driving conditions for the therapeutic ultrasonic wave generating source is adjusted on the basis of a received echo signal. The received echo signal contains information about actual intensity of the therapeutic ultrasonic waves within a living body, thus improving the safety and reliability of therapy.

11 Claims, 67 Drawing figures

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
Draw Desc	Image								

KMC

☐ 5. Document ID: US 6280402 B1 Relevance Rank: 53

L2: Entry 4 of 15

File: USPT

Aug 28, 2001

US-PAT-NO: 6280402

DOCUMENT-IDENTIFIER: US 6280402 B1

TITLE: Ultrasound therapeutic apparatus

DATE-ISSUED: August 28, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Ishibashi; Yoshiharu	Tokyo			JP
Fujimoto; Katsuhiko	Urawa			JP
Shibata; Mariko	Yokohama			JP
Suzuki; Takuji	Kawasaki			JP
Aida; Satoshi	Tokyo			JP

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Kabushiki Kaisha Toshiba	Kawasaki			JP	03

APPL-NO: 09/ 335914

DATE FILED: June 18, 1999

PARENT-CASE:

This application is a Division of application Ser. No. 08/624,104 filed on Mar. 29, 1996 now U.S. Pat. No. 5,984,881.

FOREIGN-APPL-PRIORITY-DATA:

COUNTRY	APPL-NO	APPL-DATE
JP	7/097474	March 31, 1995
JP	7-203576	August 9, 1995

INT-CL: [07] A61 B 8/00

US-CL-ISSUED: 601/2; 600/439

US-CL-CURRENT: 601/2; 600/439

FIELD-OF-SEARCH: 601/2, 601/3, 600/439, 600/440, 600/441, 600/443

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<u>5553618</u>	September 1996	Suzuki et al.	
<u>5632277</u>	May 1997	Chapman et al.	
<u>5675554</u>	October 1997	Cole et al.	
<u>5706819</u>	January 1998	Hwang et al.	
<u>5827188</u>	October 1998	Wright et al.	
<u>5984881</u>	November 1999	Ishibashi et al.	
<u>6086535</u>	July 2000	Ishibashi et al.	

FOREIGN PATENT DOCUMENTS

FOREIGN-PAT-NO

42 29 817

0 627 206

PUBN-DATE

March 1994

December 1994

COUNTRY

DE

EP

US-CL

ART-UNIT: 377

PRIMARY-EXAMINER: Lateef; Marvin M.

ASSISTANT-EXAMINER: Shaw; Shawna J

ABSTRACT:

An ultrasonic therapeutic apparatus consisting of a therapeutic ultrasonic wave generating source driven by a driver circuit to generate therapeutic ultrasonic waves, an in vivo imaging probe so as to obtain a tissue tomographic image in the vicinity of the focus of the therapeutic ultrasonic waves. The imaging probe is used to receive echoes of the ultrasonic pulses emitted from therapeutic ultrasonic wave generating source. The driving conditions for the therapeutic ultrasonic wave generating source is adjusted on the basis of a received echo signal. The received echo signal contains information about actual intensity of the therapeutic ultrasonic waves within a living body, thus improving the safety and reliability of therapy.

2 Claims, 67 Drawing figures

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
Draw Desc	Image								

KUMC

☐ 6. Document ID: US 6454713 B1 Relevance Rank: 53

L2: Entry 1 of 15

File: USPT

Sep 24, 2002

US-PAT-NO: 6454713

DOCUMENT-IDENTIFIER: US 6454713 B1

TITLE: Ultrasound therapeutic apparatus

DATE-ISSUED: September 24, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Ishibashi; Yoshiharu	Tokyo			JP
Fujimoto; Katsuhiko	Urawa			JP
Shibata; Mariko	Yokohama			JP
Suzuki; Takuji	Kawasaki			JP
Aida; Satoshi	Tokyo			JP

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Kabushiki Kaisha Toshiba	Kawasaki			JP	03

APPL-NO: 09/ 335521

DATE FILED: June 18, 1999

PARENT-CASE:

This application is a division of application Ser. No. 08/624,104 filed Mar. 29, 1996 now U.S. Pat. No. 5,984,881.

FOREIGN-APPL-PRIORITY-DATA:

COUNTRY	APPL-NO	APPL-DATE
JP	7-097474	March 31, 1995
JP	7-203576	August 9, 1995
JP	8-070206	March 26, 1996

INT-CL: [07] A61 B 17/22

US-CL-ISSUED: 600/439

US-CL-CURRENT: 600/439

FIELD-OF-SEARCH: 601/4, 601/2, 601/3, 600/439, 600/407

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<u>4617931</u>	October 1986	Dory	
<u>4620546</u>	November 1986	Aida et al.	
<u>4658828</u>	April 1987	Dory	
<u>4942878</u>	July 1990	Dory	
<u>4986275</u>	January 1991	Ishida et al.	
<u>RE33590</u>	May 1991	Dory	
<u>5076277</u>	December 1991	Iwama et al.	128/660.03
<u>5080101</u>	January 1992	Dory	
<u>5080102</u>	January 1992	Dory	
<u>5111822</u>	May 1992	Dory	
<u>5143073</u>	September 1992	Dory	
<u>5150712</u>	September 1992	Dory	600/439
<u>5358466</u>	October 1994	Aida et al.	601/4
<u>5381792</u>	January 1995	Yanagida et al.	600/439
<u>5391140</u>	February 1995	Shaetzke et al.	601/4
<u>5431621</u>	July 1995	Dory	601/2
<u>5435311</u>	July 1995	Umemura et al.	128/660.03
<u>5553618</u>	September 1996	Suzuki et al.	600/407
<u>5558092</u>	September 1996	Unger et al.	128/660.03
<u>5658239</u>	August 1997	Delmenico	601/4

FOREIGN PATENT DOCUMENTS

FOREIGN-PAT-NO	PUBN-DATE	COUNTRY	US-CL
42 27 800	March 1993	DE	
42 29 817	March 1994	DE	
43 02 538	April 1994	DE	
0 162 735	November 1985	EP	
0 170 416	February 1986	EP	
0 370841	March 1990	EP	
0 627 206	December 1994	EP	
6 59289	August 1994	JP	

ART-UNIT: 3737

PRIMARY-EXAMINER: Casler; Brian L.

ABSTRACT:

An ultrasonic therapeutic apparatus consisting of a therapeutic ultrasonic wave generating source driven by a driver circuit to generate therapeutic ultrasonic waves, an in vivo imaging probe so as to obtain a tissue tomographic image in the vicinity of the focus of the therapeutic ultrasonic waves. The imaging probe is used to receive echoes of the ultrasonic pulses emitted from therapeutic ultrasonic wave generating source. The driving conditions for the therapeutic ultrasonic wave generating source is adjusted on the basis of a received echo signal. The received echo signal contains information about actual intensity of the therapeutic ultrasonic waves within a living body, thus improving the safety and reliability of therapy.

5 Claims, 68 Drawing figures

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
Drawn Desc	Image								

KMC

☐ 7. Document ID: US 5481190 A Relevance Rank: 44

L2: Entry 10 of 15

File: USPT

Jan 2, 1996

US-PAT-NO: 5481190

DOCUMENT-IDENTIFIER: US 5481190 A

TITLE: MRI auto power control method and system

DATE-ISSUED: January 2, 1996

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Sugiura; Satoshi	Ootawara			JP

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Kabushiki Kaisha Toshiba	Kawasaki			JP	03

APPL-NO: 08/ 354473

DATE FILED: December 12, 1994

PARENT-CASE:

This is a continuation-in-part of application Ser. No. 07/914,797 filed on Jul. 16, 1992 now abandoned.

FOREIGN-APPL-PRIORITY-DATA:

COUNTRY	APPL-NO	APPL-DATE
JP	3-179850	July 19, 1991

INT-CL: [06] G01 V 3/00

US-CL-ISSUED: 324/314; 324/307

US-CL-CURRENT: 324/314; 324/307

FIELD-OF-SEARCH: 324/300, 324/307, 324/308, 324/309, 324/312, 324/314, 324/318, 324/322

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<u>4675608</u>	January 1987	Hanawa et al.	324/314
<u>4739267</u>	April 1988	Leroux et al.	324/314
<u>4806867</u>	February 1989	Hanawa et al.	324/314
<u>4866386</u>	September 1989	Sattin	324/314
<u>4983921</u>	January 1991	Kramer et al.	324/309

FOREIGN PATENT DOCUMENTS

FOREIGN-PAT-NO	PUBN-DATE	COUNTRY	US-CL
0242286A1	October 1987	EP	
0391279A2	October 1990	EP	
0463789A2	January 1991	EP	
0414474A2	February 1991	EP	
0439119A2	July 1991	EP	

OTHER PUBLICATIONS

Operation Manual, V2.0 by Diasonics MT/S, Revision A, "Image Acquisition" (date unknown).
 Operator Manual, Vol. 3, "Patient Preparation and the MR Exam" G. E. Oct. 1984.
 Patent Application Serial No. 907,519 "Automatic Transmit and Receive Attenuation Prescaling in Nuclear Magnetic Resonance Scanner".

ART-UNIT: 225

PRIMARY-EXAMINER: Arana; Louis M.

ABSTRACT:

An MRI automatic power control system comprises a first unit for exciting each of a plurality of regions of a subject under examination with an excitation radio-frequency pulse of a different power, a second unit for acquiring magnetic resonance signals from the plurality of regions excited by the first unit, a third unit for identifying a maximum magnetic resonance signal contained in the magnetic resonance signals acquired by the second unit from the plurality of regions of the subject, and a fourth unit for storing the power of an excitation radio-frequency pulse that has provided the maximum magnetic resonance signal identified by the third unit as the optimum power of the excitation radio-frequency pulses.

12 Claims, 7 Drawing figures

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
Draw Desc	Image								

KWIC

☐ 8. Document ID: US 4689563 A Relevance Rank: 43

L2: Entry 13 of 15

File: USPT

Aug 25, 1987

US-PAT-NO: 4689563

DOCUMENT-IDENTIFIER: US 4689563 A

TITLE: High-field nuclear magnetic resonance imaging/spectroscopy system

DATE-ISSUED: August 25, 1987

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Bottomley; Paul A.	Clifton Park	NY		
Edelstein; William A.	Schenectady	NY		
Hart, Jr.; Howard R.	Schenectady	NY		
Schenck; John F.	Schenectady	NY		
Redington; Rowland W.	Schenectady	NY		
Leue; William M.	Albany	NY		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
General Electric Company	Schenectady	NY			02

APPL-NO: 06/ 743125

DATE FILED: June 10, 1985

INT-CL: [04] G01R 33/20

US-CL-ISSUED: 324/309

US-CL-CURRENT: 324/309

FIELD-OF-SEARCH: 324/309

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<u>4319190</u>	March 1982	Brown	324/313 X
<u>4443760</u>	April 1984	Edelstein et al.	324/309
<u>4472683</u>	September 1984	Seikhara et al.	324/309
<u>4553096</u>	November 1985	Randell	324/309
<u>4558279</u>	December 1985	Ackerman et al.	324/315
<u>4567440</u>	January 1986	Haselgrove	324/309
<u>4602641</u>	July 1986	Feinberg	324/309 X
<u>4617516</u>	October 1986	Schenck	324/309 X
<u>4618827</u>	October 1986	Redington et al.	324/309
<u>4621235</u>	November 1986	Van Uijen et al.	324/309 X

OTHER PUBLICATIONS

"NMR: An Evolving Technology", brochure, General Electric Co. (1983), 8 pages.
"Radiology-69th Scientific Assembly & Annual Meeting, Chicago Nov. 13, 1983", brochure General Electric Co. (1983), 4 pages.
"SIGNA--The Signature of Excellence in MR Imaging", brochure, General Electric Co., Nov. 1983, pp. 1-10.
"Anatomy and Metabolism of the Normal Human Brain Studied by Magnetic Resonance at 1.5 Tesla", PA Bottomley et al., 150 Radiology 441-446 (Feb. 1984).
"Radiology--70th Scientific Assembly Annual Meeting, Washington, D.C., Nov. 25-30, 1984," brochure, General Electric Company, 1984; 7 pages.

ART-UNIT: 265

PRIMARY-EXAMINER: Noland; Tom

ABSTRACT:

A magnetic resonance system for both imaging and spectroscopy of a sample of non-magnetic material (such as a portion of the human anatomy and the like) at one static magnetic field magnitude in excess of 0.7 Tesla (T), utilizes a superconducting magnet having a room-temperature bore of diameter sufficiently large to place therein not only the desired sample but also a set of gradient magnetic field-producing coils and at least one radio-frequency coil for exciting and/or receiving response signals from the sample to be examined. The entire magnetic system has suitably-small temporal and positional field variations to allow imaging to be accomplished at the resonant frequencies of nuclei including .sup.1 H, .sup.13 C, .sup.19 F, .sup.23 Na and .sup.31 P. The system includes a novel interface subsystem, itself including a novel gradient signal switching circuit, for acquiring imaging data in relatively short time intervals.

15 Claims, 21 Drawing figures

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KMC
Draw Desc	Image									

☐ 9. Document ID: US 4689564 A Relevance Rank: 43

L2: Entry 12 of 15

File: USPT

Aug 25, 1987

US-PAT-NO: 4689564

DOCUMENT-IDENTIFIER: US 4689564 A

TITLE: Digital interface subsystem for a magnetic resonance imaging and spectroscopy system

DATE-ISSUED: August 25, 1987

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Leue; William M.	Albany	NY		
Hodsoll, Jr.; Raymond J.	Galway	NY		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
General Electric Company	Schenectady	NY			02

APPL-NO: 06/ 743119

DATE FILED: June 10, 1985

INT-CL: [04] G01R 33/20

US-CL-ISSUED: 324/309; 324/312, 324/313, 324/314

US-CL-CURRENT: 324/309; 324/312, 324/313, 324/314

FIELD-OF-SEARCH: 324/309, 324/312, 324/313, 324/314

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO.	ISSUE-DATE	PATENTEE-NAME	US-CL
<u>4115730</u>	September 1978	Mansfield	324/312 X
<u>4361807</u>	November 1982	Burl et al.	324/309
<u>4443760</u>	April 1984	Edelstein et al.	324/314 X
<u>4480228</u>	October 1984	Bottomley	324/309
<u>4573015</u>	February 1986	Abe et al.	324/313 X
<u>4585992</u>	April 1986	Maudsley et al.	324/309
<u>4585993</u>	April 1986	Bottomley	324/309 X

ART-UNIT: 265

PRIMARY-EXAMINER: Noland; Tom

ABSTRACT:

A digital interface subsystem, for a magnetic resonance imaging and spectroscopy system, has an internal data bus interconnecting: a master sequencer, receiving instructions from a main system computer; a plurality of controlled generators for providing gradient-field, RF modulation and other required signal waveforms for proper excitation of a sample; and circuitry for analyzing the magnetic resonance response signals from the sample, responsive to the excitation signals for providing image information.

18 Claims, 14 Drawing figures

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
Draw	Desc	Image							

KWC

☐ 10. Document ID: US 4680547 A Relevance Rank: 42

L2: Entry 14 of 15

File: USPT

Jul 14, 1987

US-PAT-NO: 4680547

DOCUMENT-IDENTIFIER: US 4680547 A

TITLE: Gradient field switch for improved magnetic resonance imaging/spectroscopy system

DATE-ISSUED: July 14, 1987

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Leue; William M.	Albany	NY		
Hodsoll, Jr.; Raymond J.	Galway	NY		
Glover; Gary H.	Oconomowoc	WI		
Adamchick; John T.	Amsterdam	NY		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
General Electric Company	Schenectady	NY			02

APPL-NO: 06/ 743115

DATE-FILED: June 10, 1985

INT-CL: [04] G01R 33/20

US-CL-ISSUED: 324/309
US-CL-CURRENT: 324/309

FIELD-OF-SEARCH: 324/309, 324/313, 324/318, 324/322, 128/653, 73/626

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<u>4372323</u>	February 1983	Takemura et al.	128/660
<u>4510448</u>	April 1985	Riedl	324/309

ART-UNIT: 265

PRIMARY-EXAMINER: Tokar; Michael J.

ABSTRACT:

A gradient field switch, for use in an improved nuclear magnetic resonance imaging and spectroscopy system, includes a control portion and a switching portion. The switching portion receives a plurality of magnetic field gradient signals and connects each signal to an associated one of at least the same plurality of outputs. The exact pattern of input-output interconnections is established by the control portion responsive to data received after the presence of a reset signal. By appropriate control data input, the gradient field signals can be routed to axes of a predetermined coordinate system, such that images of a sample can be obtained from several directions, responsive to command signals and without requiring physical movement of the sample being imaged.

13 Claims, 12 Drawing figures

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KWC
Drawn Desc	Image									

☐ 11. Document ID: US 4694254 A Relevance Rank: 42

L2: Entry 11 of 15

File: USPT

Sep 15, 1987

US-PAT-NO: 4694254
DOCUMENT-IDENTIFIER: US 4694254 A

TITLE: Radio-frequency spectrometer subsystem for a magnetic resonance imaging system

DATE-ISSUED: September 15, 1987

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Vatis; Dimitrios	Schenectady	NY		
Smith; Lowell S.	Schenectady	NY		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
General Electric Company	Schenectady	NY			02

APPL-NO: 06/ 743121
DATE FILED: June 10, 1985

INT-CL: [04] G01R 33/20

US-CL-ISSUED: 324/309; 324/313, 324/314, 324/322
US-CL-CURRENT: 324/309; 324/313, 324/314, 324/322

FIELD-OF-SEARCH: 324/309, 324/307, 324/312, 324/313, 324/314, 324/318, 324/322

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<u>4361807</u>	November 1982	Burl et al.	324/309
<u>4480228</u>	October 1984	Bottomley	324/307 X
<u>4506223</u>	March 1985	Bottomley et al.	324/307 X
<u>4516075</u>	May 1985	Moran	324/309
<u>4573015</u>	February 1986	Abe et al.	324/313 X
<u>4585992</u>	April 1986	Maudsley et al.	324/312 X

ART-UNIT: 265

PRIMARY-EXAMINER: Noland; Tom

ABSTRACT:

A radio-frequency (RF) spectrometer subsystem, for a nuclear magnetic resonance spectroscopy and imaging system, provides high-power RF pulse signals each having an envelope of minimum distortion; a portion of the actual RF magnetic field, in the sample-examination volume, is returned to the spectrometer for subsequent correction of the RF signal characteristics responsive to a comparison of the RF magnetic field sample waveform to the requested pulse envelope waveform.

20 Claims, 23 Drawing figures

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
Draw Desc	Image								

KMC

☐ 12. Document ID: US 5588032 A Relevance Rank: 40

L2: Entry 9 of 15

File: USPT

Dec 24, 1996

US-PAT-NO: 5588032
DOCUMENT-IDENTIFIER: US 5588032 A

TITLE: Apparatus and method for imaging with wavefields using inverse scattering techniques

DATE-ISSUED: December 24, 1996

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Johnson; Steven A.	Salt Lake City	UT	84108	
Wiskin; James W.	Salt Lake City	UT	84112	
Borup; David T.	Salt Lake City	UT	84103	
Christensen; Douglas A.	Salt Lake City	UT	84121	
Stenger; Frank	Salt Lake City	UT	84103	

APPL-NO: 07/ 961768

DATE FILED: October 14, 1992

INT-CL: [06] G01 N 23/201, G01 V 1/00

US-CL-ISSUED: 378/8; 378/90, 378/98, 378/901, 364/413.13, 364/413.14, 364/421

US-CL-CURRENT: 378/8; 378/90, 378/901, 378/98, 702/1

FIELD-OF-SEARCH: 128/653.1, 128/664, 128/665, 128/660.02, 128/660.07, 364/413.13, 364/413.14, 364/421, 364/422, 378/86, 378/87, 378/90, 378/98, 378/901

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<u>4662222</u>	May 1987	Johnson	73/602
<u>4727550</u>	February 1988	Chang et al.	372/2
<u>4798209</u>	January 1989	Klingenbach et al.	128/653
<u>5227797</u>	July 1993	Murphy	342/22

OTHER PUBLICATIONS

Berggren, M. J., Johnson, S. A., Kim, W. W., Borup, D. T., Eidens, R. S., and Zhou, Y., (1987) "Acoustic Inverse Scattering Images from Simulated Higher Contrast Objects and from Laboratory Test Objects," Acoustical Imaging 16, Chicago, Ill., Jun.

Berggren, M. J., Johnson, S. A., Carruth, B. L., Kim, W. W., Stenger, F., and Kuhn, P. L., (1986) "Performance of Fast Inverse Scattering Solutions for the Exact Helmholtz Equation Using Multiple Frequencies and Limited Views," Acoustical Imaging 15, Halifax, Nova Scotia, Jul.

Bolemy, J. C., and Pichot, C., (Apr. 1991) "Some Applications of Diffraction Tomography to Electromagnetics--The Particular Case of Microwaves," in Inverse Problems in Scattering and Imaging, edited by M. Bertero and E. R. Pike, Adam Higler (Publisher), New York, 1992. Presented at the Proceedings of a Nato Advanced Research Workshop, Cape Cod, Apr., 1991.

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Borup, D. T., and Gandhi, O. P., (1985) "Calculation of High-Resolution SAR Distribution in Biological Bodies Using the FFT Algorithm and the Conjugate Gradient Method," IEEE Trans. Microwave Theory Tech., MTT-33, 417-419.

Borup, D. T., (1989) Fast-Fourier-Transform Based Iteration Methods for Solving the Electric Field Integral Equation for Anatomically Detailed Man Models, Ph.D. Dissertation, University of Utah, Salt Lake City, Utah.

Borup, D. T., Johnson, S. A., Kim, W. W., and Berggren, M. J., (1992) "Nonperturbative Diffraction Tomography via Gauss-Newton iteration applied to the Scattering Integral Equation," Ultrasonic Imaging 14, pp. 69-85, Jan.

Broquetas, A., Romeu, J., Rius, J. M., Elis-Fuste, A. R., Cardama, A. and Jofre, L., (1991) "Cylindrical Geometry: A Further Step in Active Microwave Tomograph," IEEE Trans. Microwave Theory Tech., vol. 39, No. 5, pp. 836-844, May.

Candy, J. V. and Pichot, C., (1991) "Active Microwave Imaging: A Model Based Approach," IEEE Trans. Antennas Propagat, vol. 39, No. 3, pp. 285-290, Mar.

Cavicchi, T. J., Johnson, S. A., and O'Brien, Jr., W. D., (1988) "Application of the Sinc Basis Moment Method to the Reconstruction of Infinite Circular Cylinders", IEEE Trans. Ultrasonics, Ferroelectr., Freq. Control, UFFC-35, 22-23.

Chew, W. C. and Wang, Y. M., (Jan. 1990) "Reconstruction of Two-Dimensional

- Permittivity Distribution Using the Distorted Born Iterative Method," IEEE Microwave Theory Tech., pp. 218-225.
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- Johnson, S. A., Zhou, Y., Berggren, M. J., and Tracy, M. L. (1983) "Acoustical Inverse Scattering Solutions by Moment Methods and Backprojection," in Conference on Inverse Scattering: Theory and Application, SIAM, Philadelphia.
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- Kim, W. W., S. A. Johnson, M. J. Berggren, F. Stenger, and C. H. Wilcox, "Analysis of Inverse Scattering Solutions from Single Frequency, Combined Transmission and Reflection Data for the Helmholtz and Riccati Exact Wave Equations," Acoustical Imaging 15, pp. 359-369, Plenum Press (1987).
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Three-dimensional Bodies in Layered Earth Using Integral Equations."

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Wombell, R. J., and Fiddy, M. A., (1988) "Inverse Scattering within the Distorted-Wave
Born Approximation," Inverse Problems 4, (1988).

Ladas, Kostas T, and A. J. Devaney, "Iterative methods in Geophysical Diffraction
tomography," Inverse Problems 8, (1992).

ART-UNIT: 256

PRIMARY-EXAMINER: Dzierzynski; Paul M.

ASSISTANT-EXAMINER: Bruce; David Vernon

ABSTRACT:

An apparatus and method for rapid real time imaging with wavefield energy by inverse scattering using a C.P.U programmed to process data derived from wavefield energy that has been transmitted and scattered by an object so as to reconstruct a wavefield image of the object. Electronic signals are propagated and are transduced into wavefield energy waves which in turn are propagated toward the object. Detector means detect the wavefield energy waves scattered by the object. The detected wavefield energy waves are then electronically processed and input into a high-speed digital computer which may comprise a C.P.U. and/or a C.P.U in combination with an array or parallel processor. Data is also prepared and input to the computer representing the incident field and the computer then reconstructs a high-quality image of the object having high spacial resolution and including actual internal viscous and elastic properties of the object through the use of new inverse scattering techniques used in the data processing steps. The media in which the object is embedded may be fluid or solid, homogeneous, or layered (such as stratigraphic layering, or ocean velocity layers, or layering of composites in nondestructive imaging applications), or may consist of porous material (either sedimentary deposits or composites in nondestructive testing).

120 Claims, 63 Drawing figures

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
Draw Desc	Image								

KWC

☐ 13. Document ID: US 6005916 A Relevance Rank: 40

L2: Entry 7 of 15

File: USPT

Dec 21, 1999

US-PAT-NO: 6005916

DOCUMENT-IDENTIFIER: US 6005916 A

TITLE: Apparatus and method for imaging with wavefields using inverse scattering techniques

DATE-ISSUED: December 21, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Johnson; Steven A.	Salt Lake City	UT		
Borup; David T.	Salt Lake City	UT		
Wiskin; James W.	Salt Lake City	UT		
Natterer; Frank	Muenster			DE
Wubeling; F.	Muenster			DE
Zhang; Yongzhi	Madison	WI		
Olsen; Scott Charles	Salt Lake City	UT		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Techniscan, Inc.	Salt Lake City	UT			02

APPL-NO: 08/ 972101

DATE FILED: November 17, 1997

PARENT-CASE:

This patent application is a continuation of U.S. patent application Ser. No. 08/706,205 filed on Aug. 29, 1996, which is a continuation-in-part of U.S. patent application Ser. No. 08/486,971 filed on Jun. 22, 1995 now abandoned, which is a continuation-in-part of U.S. patent application Ser. No. 07/961,768 filed on Oct. 14, 1992 now U.S. Pat. No. 5,588,032, all of which are incorporated herein by reference.

INT-CL: [06] G01 N 23/201

US-CL-ISSUED: 378/87; 378/98, 378/99, 600/425, 600/437

US-CL-CURRENT: 378/87; 378/98, 600/425, 600/437

FIELD-OF-SEARCH: 378/8, 378/86, 378/87, 378/90, 378/98, 378/901, 600/410, 600/425, 600/437, 600/476

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<u>4622222</u>	November 1986	Johnson	73/602
<u>4727550</u>	February 1988	Chang et al.	372/2
<u>4798209</u>	January 1989	Klingenbeck et al.	128/653
<u>5227797</u>	July 1993	Murphy	342/22
<u>5588032</u>	December 1996	Johnson et al.	378/8
<u>5667893</u>	September 1997	de Hoop et al.	367/50

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Berggren, M.J., Johnson, S.A., Kim, W.W., Borup, D.T., Eidens, R.S., and Zhou, Y., (1987) "Acoustic Inverse Scattering Images from Simulated Higher Contrast Objects and from Laboratory Test Objects," Acoustical Imaging 16, Chicago, Ill., Jun.

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Cohen, J.K. and F.G. Hagin, "Velocity Inversion using a Stratified Reference," Geophysics, 50, 11, 1985.

ART-UNIT: 286

PRIMARY-EXAMINER: Bruce; David Vernon

ABSTRACT:

An apparatus and method for rapid real time imaging with wavefield energy using a C.P.U. programmed to process data derived from wavefield energy that has been transmitted and scattered by an object so as to reconstruct a wavefield image of the object. Electronic signals are propagated and are transduced into wavefield energy waves which in turn are propagated toward the object. Detectors detect the wavefield energy waves scattered by the object. The detected wavefield energy waves are then electronically processed and input into a high-speed digital computer which may comprise a C.P.U. and/or a C.P.U. in combination with an array or parallel processor. Data is also prepared and input to the computer representing the incident field and the computer then reconstructs a high-quality image of the object having high spacial resolution and including actual properties of the object. The media in which the object is embedded may be fluid or solid, homogeneous, or layered (such as stratigraphic layering, or ocean velocity layers, or layering of composites in nondestructive imaging applications), or may consist of porous material (either sedimentary deposits or composites in nondestructive testing).

193 Claims, 98 Drawing figures

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
Draw Desc	Image								

KVMC

☐ 14. Document ID: US 3577145 A Relevance Rank: 40

L2: Entry 15 of 15

File: USPT

May 4, 1971

US-PAT-NO: 3577145

DOCUMENT-IDENTIFIER: US 3577145 A

TITLE: RADAR SYSTEM SPIN ECHO CORRELATOR

DATE-ISSUED: May 4, 1971

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Worden; Robert A.	Eaton	NY		
Hair; Hugh H.	Liverpool	NY		
Gerst; Carl W.	Skaneateles	NY		
Viglietta; Benadict	Clinton	NY		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
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APPL-NO: 04/ 849719
DATE FILED: August 13, 1969

INT-CL: [] G01s 9/24

US-CL-ISSUED: 343/17.2PC; 235/181, 324/.5R
US-CL-CURRENT: 342/189; 324/300, 342/201, 708/813

FIELD-OF-SEARCH: 343/17.2, 343/17.2 (PC), 235/181, 324/.5

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<u>3265961</u>	August 1966	Mims	324/.5

ART-UNIT: 222

PRIMARY-EXAMINER: Tubbesing; T. H.

ABSTRACT:

The spin properties of paramagnetic materials are utilized to provide a correlator of radar signals. Paramagnetic materials having an in homogeneous resonance line and relatively long spin-spin and spin-lattice relaxation times such as phosphorous-doped silicon are placed into a coupling structure which couples RF energy to the magnetic spin system. Such a structure can be a simple tuned LC oscillator for low-frequency operation or a microwave cavity or slow wave structure for microwave operation.

4 Claims, 19 Drawing figures

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KWIC
Draw Desc	Image									

☐ 15. Document ID: US 6295677 B1 Relevance Rank: 40

L2: Entry 3 of 15

File: USPT

Oct 2, 2001

US-PAT-NO: 6295677
DOCUMENT-IDENTIFIER: US 6295677 B1

TITLE: Method for inspecting liquid filled pipes using magnetostrictive sensors

DATE-ISSUED: October 2, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Kwun; Hegeon	San Antonio	TX		
Bartels; Keith A.	San Antonio	TX		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Southwest Research Institute	San Antonio	TX			02

APPL-NO: 09/ 469423
DATE FILED: December 23, 1999

INT-CL: [07] G01 N 29/08, G01 N 29/14

US-CL-ISSUED: 7/602; 73/622
US-CL-CURRENT: 73/602; 73/622

FIELD-OF-SEARCH: 73/622, 73/623, 73/587, 73/602, 73/592, 73/594, 73/597, 73/598,
73/599, 73/600

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<u>4428235</u>	January 1984	Sugiyama	73/579
<u>4577503</u>	March 1986	Imaino et al.	73/602
<u>4937767</u>	June 1990	Reuschel et al.	364/570
<u>5144389</u>	September 1992	Lochner	73/609
<u>5404754</u>	April 1995	Wang	73/602
<u>5425272</u>	June 1995	Rhodes et al.	73/579
<u>5458120</u>	October 1995	Lorraine	128/63.01
<u>5537876</u>	July 1996	Davidson et al.	73/624
<u>5549111</u>	August 1996	Wright et al.	128/742
<u>5581037</u>	December 1996	Kwun et al.	73/623
<u>5734588</u>	March 1998	Rose et al.	364/507
<u>5970434</u>	October 1999	Brophy et al.	702/170
<u>6000288</u>	December 1999	Kwun et al.	73/597

ART-UNIT: 286

PRIMARY-EXAMINER: Williams; Hezron

ASSISTANT-EXAMINER: Miller; Rose M.

ABSTRACT:

An improved method for defect detectability for the inspection of liquid filled pipes using magnetostrictive sensors. The improved method comprises first recognizing the liquid-induced changes in the dispersion properties of the second longitudinal wave mode, L(0,2). These liquid-induced changes include a severe dispersion at periodic branching frequencies that result in a pulse-like characteristic in the extended received signal. A trailing portion of a received signal component associated with a geometric irregularity, is shown to comprise the branching frequency components. The trailing portion of the extended signal may therefore be removed in order to improve defect detection. The removal process comprises one of three alternative methods. A first method includes creating a short duration pulse free of the frequency components that comprise the trailing signals, and applying the pulse to a magnetostrictive transmitter, thereby generating a longitudinal wave signal in the pipe wall free of the trailing signal frequency components. A second method comprises transmitting a broadband signal and processing the detected signal through a digital filter that eliminates those frequency components known to comprise the trailing signals. A third method involves using a signal whose bandwidth lies in the region between two adjacent branching frequencies in the dispersion curve. The result is a detected signal within which components representative of irregularities are less extended and therefore less likely to override subsequent defect components in the detected signal.

12 Claims, 8 Drawing figures

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
Drawn Desc	Image								

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Term	Documents
SIGNAL.DWPI,TDBD,EPAB,JPAB,USPT,PGPB.	2932974
SIGNALS.DWPI,TDBD,EPAB,JPAB,USPT,PGPB.	1455848
TRANSMITTER.DWPI,TDBD,EPAB,JPAB,USPT,PGPB.	262674
TRANSMITTERS.DWPI,TDBD,EPAB,JPAB,USPT,PGPB.	50377
(1 AND (SIGNAL ADJ TRANSMITTER)).USPT,PGPB,JPAB,EPAB,DWPI,TDBD.	15
(L1 AND (SIGNAL ADJ TRANSMITTER)).USPT,PGPB,JPAB,EPAB,DWPI,TDBD.	15

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